the Kootenay Air Supply Co., to make a similar installation in the Rossland and Ymir districts. In the former district some 750 actual air h.-p. are to-day being consumed, and the total cost of theair h.-p. at the mine to-day averages more than \$200 per air h.-p. per annum. This section is one of the most inviting fields for the installation of a plant, the rock being especially hard, and the air power being absolutely indispensable for mining in the district.

A COLD WEATHER LUBRICATOR.

In the Northern States and Canada, where the winters are severe and of considerable length, it is often a difficult matter to maintain a steady feed of oil to the cylinders of engines. This is particularly true. in the case of many mills and other steam plants where the engine room is exposed more or less to the cold. The oil thickens into a viscous, jellylike mass, which will not break up into drops nor feed through the ordinary lubricator. As a result, the valves become cut and worn, and there is a double waste of energy due both to the cold and to the fric-

tion. Recently an ingenious lubricator

•has been designed by the Detroit Lubricator Co., of Detroit, Mich., to overcome these conditions. It is very appropriately ca'led the "Zero," and is shown in the accompanying cut. Right above the support arm, inside the outer

such, is a heating chamber, which is always filled with steam while the engine is working. This steam heats

the oil, and keeps it warm and in a liquid state, no matter how cold the weather. Of course, in very cold weather, it will use up some steam to

keep the oil heated, just as it does to

keep the cylinder heated, but the boat

in the one case is just as positive as in



the other. This heating chamber is perfectly automatic. In cold weather the steam in this heating chamber condenses more or less, and the condensed water runs back into the steampipe, keeping the chamber always filled with steam. These "Zero" cups have been on the market for nearly two years. They have been adopted by almost every American builder of threshing engines and by several Canadian ones. They are also used very generally on stationary engines that have to work in cold locations. Any one interested can obtain a descriptive circular or a complete catalogue showing them by dropping a card to the manufacturers.

DANGEROUS PLUMBING.

Bdilor THE CANADIAN ENGINEER.

SIR,—In one of Toronto's large, well-appointed and handsomely furnished residences, a licensed plumber was engaged to remove an old pan water-closet, and the lead bend and P.-trap, and fix in a 4-inch by 4-inch tee in place of the lead quarter bend, and a 4-inch lead bend in place of the P.-trap, and an improved sanitary two-piece water-closet in place of the old pan water-closet.

The house had been fitted up in the first place in the old English style, having a large lead-lined storage cistern, from which the w.c. was flushed, and the range boiler and every water tap in the house was supplied. The cistern itself receiving its water through a ball tap and lead pipe direct from the city water mains. The old pan was vented by the 2-inch horn upward through the roof by a 2-inch sheet-iron pipe that dropped in two when the old closet was removed at the point shown in the sketch between the cistern and a wall having a space of about six inches jammed with about six different lines of pipes.

From the socket of the 4-inch to 4-inch soil pipe tee, the plumber fixed a 2-inch piece of sheet iron pipe up to within 11/2 inches of the end of the old pan w.c. vent pipe at the end of cistern (see sketch), and there left it as a completed job, because one end was vertically under the other. By this, most of the sewer gas that should pass out through the roof is abstracted and absorbed by the drinking water stored in the cistern close by, which would partly poison the water and make it unfit to use for domestic purposes. And if not all absorbed by the cistern water, the balance would pass into the room, little if any would pass up the pipe except when the temperature of the room was lower than the outside. From the vent-horn of the new sanitary trap, he took another two-inch sheet iron pipe up and over the ceiling of room for twenty feet perfectly level to a chimney. He could have graded upward to a higher level of S feet if he chose. To expect air to circulate through so long and small a pipe laid level is absurd, and if it did deliver the sewer gas in the chimney at the point about 12 feet below the discharge head, it would not ascend upward

except when the flue was warm When no fire was burning and the flue was cold the sewer gas would descend the straight flue into the living apartments.



The third error is seen by referring to the sketch at the point where the $1\frac{1}{2}$ -inch bath waste joins the heel of 4-inch lead bend. When bath pipes are joined in this way the excrement is liable when it bounces on the heel of bend to rebound back up the $1\frac{1}{2}$ -inch pipe, and charge the pipe, beside pressing the foul air in the small pipe through the water seals and by the act of making the water seal to oscillate to break the seal of the trap and leave it open until more water is run in.

This job has only been done within a few weeks time and one would hardly have expected to find such dangerous ignorance displayed, especially in a house where the total cost of good sanitary arrangements and workmanship would probably be only one-tenth of the amount of the house furnishing.

WM. WATSON.

567 King st. W., Toronto, Feb. 15th, 1898.

METAL IMPORTS FROM OREAT BRITAIN.

The following are the sterling values of the metal imports from Great Britain during January, 1896, 1897.

Hardware and cutlery	January. 1896. 4,765	January, 1897. 1,636
Pig iron	380	504
Bar, etc	1,236	285
Railroad	••	٥ز
Hoops, sheets, etc	1,840	827
Galvanized sheets	654	2,031
Tin plates	22,508	11,929
Cast, wrought, etc., iron	1,684	1,874
Old (for remanufacture)	191	••
Steel	2,586	4,521
Lead	519	978
Tin, unwrought	3,046	422
Cement	468	518

CANADIAN ASSOCIATION OF STATIONARY ENGINEERS.

KINGSTON NO. 10.

A special meeting of Kingston No. 10 Canadian Association of Stationary Engineers was held in Congress Hall, January 26th, 1898. It was called for the purpose of visiting the members of Parliament, B. M. Britton for the city and David Rogers for the county, re legislation. The following members of the association were present : President Simmons, Vice-President Asselstine, Past President Donnelly, Bros. Hoppins, Blomely, Woodrow, Davis, Taudrein, Linton, Strong, Gascoyne, Selley, Derig, Bajus, Turnbull, sr., Tait and Orr. There were also present certificated members of the Ontario Association : David Leslie, P. McArdle, James Ross and George Hazlett, of the Winnipeg branch of the association. All of the above members formed a deputation and proceeded to B. M. Britton's office; when David Rogers arrived the business was proceeded with, President Simmons reading and presenting an address, along with a copy of the Aci, to Mr. Britton, after which H. Hoppins, in a few well chosen remarks, pre-